



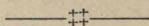
UNIVERSITY OF CALIFORNIA.

AGRICULTURAL EXPERIMENT STATION.

BERKELEY, CAL.

E. W. HILGARD, Director.

BULLETIN NO. 91.



A—PORT AND SHERRY GRAPES IN CALIFORNIA.

B—IMPORTATION OF ITALIAN GRAPES.

C—IMPORTATION OF OLIVES.

A—PORT AND SHERRY GRAPES IN CALIFORNIA.

Now that the passage by Congress of the "free fortification" provisions of the tariff bill, when rightly interpreted, will render it possible for California sweet wines to compete in the world's market, it becomes of vital importance that the quality of the wines offered, especially to foreign consumers, should be such as to commend them to the existing taste, accustomed to the products of Spain and Portugal. This is the more essential, as we can justly claim that we possess the exact counterpart of the climatic conditions existing in those countries, the home of the olive, fig and orange; and hence there can be no excuse for our falling short of the types esteemed in commerce as the standard ports, sherries and Madeira.

In consequence of the very slight encouragement heretofore existing for the production of wines of this class, they have largely been made as a matter of convenience in disposing of material that, whether from the quality of the grapes or from miscarriage in fermentation, could not readily be made into good dry wines. It is but natural that a good deal of the sweet wine thus thrown upon the market bore but a slight resemblance to the type of which it bore the label, for grapes of the claret type are no more fit for making port than Rhenish grapes are for making sherries, or *vice versa*.

It has, however, been early recognized that

the San Joaquin valley, and later on, that the foothills of the Sierra have a tendency to impart the port and sherry character to the wines from grapes not too far removed from the type of those used for that purpose in the Old World. Excellent samples of such wines have been produced, and a few wine-makers have made a specialty of their manufacture. In general, nevertheless, the plantations of grapes especially adapted to the purpose are few and relatively of small extent. The probability that under the improved prospects of the sweet-wine industry, it will be desired by many to graft over other vines to the best sherry or port grapes, renders it desirable that a succinct discussion of the several varieties suitable to that purpose and now obtainable within the State should be given for the benefit of those concerned.

A highly essential advantage possessed by most of these grapes as compared with those of the claret and Burgundy types is that they resist to an extraordinary degree the influences under which the wines made from grapes of the latter two types become vinegar. Instead, they undergo, under the continued action of warm air, the change to the true sherry and port flavor, which in its more advanced development is known under the name "*rancio*." Since the least acetic (or vinegar) taint is far

more offensive in sweet than in dry wines, this peculiarity of the true port and sherry grapes is most valuable to the maker, and should commend them for exclusive use in all high-grade sweet wines. It is of course true that when grown in unsuitable localities any of these grapes may measurably lose their resistance to acetic taint and will not readily assume the "rancio" flavor when under the influence of the artificial climate of the hot-room. On the other hand, varieties that in the coast climate will ordinarily make wines of the claret or Burgundy types may in the Great valley or Foot-hills make at least fair port wines. The same holds true more or less as regards white grapes in their relation to the sherry type; yet on the whole it is much more difficult to make the product from Rhenish or Sauterne grapes pass muster as sherries or Madeiras. It is certainly much more reasonable to conform as soon as possible to the recognized natural adaptations of climate and soil, and use for the production of the several classes of sweet wines the grapes which the experience of centuries has shown to be the best for that purpose.

Below are given brief descriptions of the port and sherry grapes thus far known to be growing in California, together with such data as I have been able to obtain either from the viticultural stations and the experimental vinifications at the Station laboratory, or from the experience of others.

PORT WINE VARIETIES.

TINTO CAO.—Tinto cão or Tinta cam is a very old variety of the Douro region; in Portugal it is very highly esteemed for its strong and good wine, but is not a very productive variety. It requires short pruning. Bunches somewhat loose, average size and irregular; berries round, rather small, bluish-black; skin thick and tough; juice sweet and astringent.

This variety matures late. At Cupertino, it has usually given a small or poor crop, much damaged by coulure; the average sugar acquired by the must is about 24 per cent. The wine obtained at the Station cellar is only of fair quality and difficult to keep.

Evidently this variety, like the related varieties from Portugal, requires a warmer climate; in fact the same varieties grown at Fresno always gave a more abundant crop and of better quality.

TINTA AMARELLA.—This is one of the best varieties of the Douro region in Portugal; it is there a very large bearer and grows very well in strong soils.

Bunches, of good size, pyramidal or conical, heavily shouldered, close. Grapes, medium size but irregular, varying from very small to rather large, and from nearly round to distinctly oval. Skin, rather thick but not tough. Flesh, firm but juicy, flavor, sweet, not marked. Peduncle thick, strong and woody. Pedicels, rather long and of medium strength.

Generally it ripens about the middle of October at Cupertino, being therefore of rather late maturity.

The observation made in regard to Tinta-cão must be repeated for this variety, viz., a small or average crop at Cupertino and Mission San Jose, while bearing a big crop in Fresno. Much coulure observed at the former localities, very little at the latter. Sugar contents of the must averaging 25 per cent. The wine is of fair

quality, but requires blending to make a faultless port wine.

TINTA DE MADEIRA.—This is one of the several "Tintas" (black varieties) growing on the Island of Madeira. Bunches, medium size, cylindrical or conico-cylindrical, shouldered, sometimes loose, sometimes rather compact. Berries, medium sized, round; skin, thick but tender, dark colored; flesh, juicy, without marked flavor. Peduncles, green, of medium thickness. Pedicels, slender and rather long. Generally it matures some days before the "Tinta Amarella." At the experiment plot in Cupertino, has given a pretty fair crop, always more than either Tinto-cão or Tinta amarella. It had also very much less coulure than the two latter varieties. Must averaging about 25 per cent of sugar at Cupertino. Wine obtained is only of fair quality.

MOURISCO PRETO (Mourisco tinto do Douro, Uva rei).—This is one of the most highly esteemed vines of the Douro region, and must not be confounded with the Mourisco cultivated in the Minho country, which is totally different. It is of vigorous growth and makes hard and strong wood; leaves large, of uniform size, almost round. Bunches numerous and sometimes very large, pyramidal in form; berries large, pale black; flesh quite firm, skin thick, juice sweet and agreeable. It matures late in the second epoch; no observations have been made on it at the station since 1884, when grapes were received from the Natoma vineyard on Sept. 26th and showed only 21.4 per cent of sugar. It was reported as bearing heavily; it doubtless belongs in the warmest parts of the State.

BASTARDO.—This variety, extensively planted at the Island of Madeira and in Portugal, is quite widely cultivated in Spain for red, sweet wines. It grows also perfectly in Northern and Central French vineyards as well as in Southern localities. Its bunches generally are small, cylindrical or conico-cylindrical, berries of average size, regular and ovo-conical in form, entirely black, and tough; flesh juicy, sweet and very agreeable. It has strong and regular growth and matures early.

At the experiment plot at Cupertino the Bastardo has given somewhat large crops, suffering but little from coulure and sunburn. Must contains on the average about 27 per cent of sugar. Wine obtained at the experiment cellar from this variety has been only fair; it was of rather delicate quality, but not a good keeper. In Portugal, the Avelhaço (known here as Pied de Perdrix) is usually blended with it for the darker-colored export wines, or "ports."

ALVARELHAO (*Locaia*—*Pied de Perdrix*).—This variety, known in California as Pied de Perdrix, but only very little cultivated, ought to be propagated more than has been done heretofore, because it is one of the best "port" wine varieties, which remedies the deficiencies of the Bastardo, with which it is usually blended on account of its intense color (shown even in its leaves) and heavy body. Bunches medium size, branched; berries medium size, regular, oval, black, tender; flesh sweet but with considerable acid, very agreeable. Matures early (end of August). It is very liable to attack by the "Oidium," or powdery mildew. At Mission San Jose, matured late for its kind and gave a small crop, while in Fresno it showed a better crop and ripened early, but no samples sufficient for experimental working have been ob-

tained. Whether this is the same grape grown under that name by Mr. Crabb in the Napa valley, we are not certain.

SHERRY AND MADEIRA VARIETIES.

PEDRO JIMENES.—The Pedro Jimenes is one of the most highly esteemed wine grapes of Spain, and enters largely into the celebrated wines of Malaga, Jeres, San Lucar, etc. It belongs decidedly to the warmer climates only, such as Southern France, Spain and Algeria, and its success in the coast counties of California should, therefore, be at least doubtful. The vine being exceedingly productive, requires short pruning and a fertile soil, since otherwise it would soon be exhausted.

Bunches large, branched, conico-cylindrical, rather close from young and vigorous vines; berries medium size, somewhat ellipsoidal; skin thin but resistant, golden yellowish; flesh very juicy, sweet and agreeable. It matures late in the 3d epoch.

At Cupertino and Mission San Jose it never gave a satisfactory crop and was badly attacked by coulure. The sugar contents of the must averaged only about 20 per cent, while at Fresno we noted heavy and healthy crops of high sugar contents.

PALOMINO, OR LISTAN.—The Palomino is one of the most important grapes of southwestern Spain, and is also grown in southern France and in Algeria under its second name. The latter form seems to have been early introduced into California and acquired the very inappropriate name of "Golden Chasselas." The later importations of the Spanish Palomino seem to differ slightly from the earlier, in lighter bearing and higher quality of wine. Its vigorous growth and large bunches, close-packed, are too well known to require description. It matures somewhat later than the Verdelho, and at Cupertino and Mission San Jose acquires only from 22 to 24 per cent of sugar, making an excellent dry wine. In the interior valleys and foothills it justifies its high reputation as a sherry grape of the best type.

MANTUO DE PILAS.—This grape is little known outside of the sherry districts of southwestern Spain, where it is locally of considerable importance. While it is related to the Palomino, yet it yields wines of a different character and high grade, and is very distinct both in its habit of growth and the larger size of its berries. The latter are somewhat elongated, very firm-fleshed, and from Spain are reported as maturing very late; at Natoma it was gathered early in October with 19 per cent of sugar from second-year grafts. The bunches are loose, long-conical and of fairly large size; and altogether the variety, with its close relative the Peruno, gives promise of being a desirable table and shipping grape. In Spain it is also used for raisins.

MANTUO PERUNO.—According to Rojas, the Spanish ampelographer, this grape is in the plain of Granada the most abundantly cultivated after the Pedro Jimenes; it forms a large ingredient of the "Malaga" sherries. It is a strong grower, with long canes and leaves resembling those of the Palomino, but smaller; bunches short, loose, roundish, sometimes with long pendent branches; berries above medium size, somewhat unequal, globular, flattened at base, greenish-yellow, or sometimes reddish-cheeked, with strong bloom, somewhat trans-

lucent; skin rather thick, resisting weather very well; hence this grape is much used for winter keeping by simply hanging up in a dry place. At Natoma it matured early in October, with 23 per cent of sugar, and was reported a fair bearer. The grapes kept readily for four weeks suspended in a garret at Berkeley.

VERDELHO.—This grape is largely cultivated in the Island of Madeira, where it enters into the finest qualities of wines. It is also cultivated to some extent in France, but mainly as a table variety. Excellent wine is made of it in the Crimea. The Verdelho is a vigorous stock and requires rather short pruning. Its bunches are small and loose, its berries also small and long-oval, very firm, golden-translucent, and resist wet weather remarkably well, but mature quite early even in coast region, acquiring easily 26 to 28 per cent of sugar. It thus stands foremost among the sherry grapes for the cooler portions of the State. Its bearing at Cupertino and Mission San Jose has been only fair, partly from early coulure; and at Fresno it has yielded a heavy and sound crop. It makes a delicious dry wine and (alone or better blended) the best type of sherry or madeira, with delicate, fruity bouquet.

MOURISCO BRANCO.—This variety, cultivated extensively in Portugal, makes long and large bunches having berries very close-packed, as large as a hazel-nut, amber-colored; skin-thick and flesh juicy and sweet. It matures early and prefers rich soils and short pruning. Its wine has great value; raisins are made from it.

From Natoma it was reported to be a heavy bearer of good vigor. The must showed about 24 per cent of sugar, but no good sample of wine was obtained from it on account of its incomplete fermentation.

BEBA.—The Beba resembles the Peruno and Mantuo de Pilas; is but little known save as an ingredient of sherries in southwestern Spain. Its name seems to indicate that it is supposed to contribute materially to the "drinkableness" of wines.

Its growth is long and heavy, leaves and berries large, the latter white and round. It is used also as a raisin grape. At Natoma, was a fair bearer, and ripened late in October. The sugar contents of the then young vines averaged about 23 per cent. The wine was light-straw colored, of heavy body and bouquet and of agreeable taste. It developed very promisingly, but there was too little of it for definite results.

BOALDE MADEIRA.—A grape of pronounced sherry character, of high quality, and clearly belonging to the warmer climates only. At Mission San Jose it suffers greatly from coulure, and is only of medium strong growth, while from Natoma it was reported as being a heavy bearer of good vigor. Bunches large and rather loose, branching; berries ellipsoidal, below medium size, on long and slender pedicels. Skin thick but quite tender and easily damaged in transportation.

At Mission San Jose and Cupertino this variety gave a small crop and was much damaged by coulure; but from Natoma it was reported to be a heavy bearer of good vigor. It matures at Mission San Jose in September; the sugar content of the must was about 25 per cent. The samples of wine made from this grape at the University cellar have not been very satisfactory on account of the poor or green condition of the grapes received. But we may expect to

find a valuable variety for sherry purposes in the Boal, when grown in a suitable climate.

WEST'S WHITE PROLIFIC.—Whatever may be the true name and origin of this now well-known vine, it clearly belongs to the sherry group, and deserves great attention, both in this direction and in that of a brandy grape, for which Mr. West's experiments prove it to be admirably adapted.

At the University Plot, Cupertino, as every-

where else, it has maintained its reputation for heavy bearing, the average of 40 vines, long-pruned, being in 1885 57½ pounds each. Its bearing is very regular and it suffers but little from coulure anywhere that it has been observed; sugar contained in must averaging high, viz., about 26 per cent. The wine obtained has doubtless the sherry character, though hardly as pronouncedly as the Palomino when grown under favorable conditions.

B—IMPORTATION OF ITALIAN GRAPES.

The importations of European grapes into California have thus far included but a few of the varieties grown in Italy; France, Germany and to some extent Spain being the countries most largely represented in our vineyards. Yet the classic land of the orange and lemon would naturally seem to be entitled to the most particular consideration within the "citrus belts" that form the special pride and source of profit in this State. It is hardly reasonable to expect that the wines of the Rhine, and even those of the Garonne, will be characteristically reproduced alongside of the orange, olive and fig.

Our investigations of the changes undergone by northern grapes in the hot interior of this State, coincidentally with the evidence afforded by the wines to the taste, show that a deficiency in acid and an excess of tannin is the almost invariable result. With the deficiency in acid comes difficult fermentation, and a lack of the "bouquet" that forms the particular merit of the wines of cooler climates; and the result is, hot, tasteless and astringent products of little commercial value, and poor keeping qualities.

It is quite otherwise with varieties adapted to the warm climates. Both in Spain and in Northern Italy, excellent dry wines are made, and the grapes which produce the latter have received our special attention during the past three or four years.

So far as I am aware, the only Italian wine grape that came with the early importations was the one now generally known as "Crabb's Black Burgundy," and further misnamed "Petit pinot;" since the leaf is the only point in which this variety even remotely resembles the true Burgundies or pinots. For it is remarkable for deep color and a good proportion of acid and tannin; qualities in which the true Burgundies are notably deficient. This grape is definitely shown to be identical with the Italian "Refosco."

The next importation of Italian grapes was made in the early eighties by John T. Doyle, Esq., who obtained small numbers of cuttings by mail, and partly rooted, partly grafted them, in his vineyards at Menlo Park and Cupertino. Among his earliest importations were the Nebbiolo, holding in Northern Italy the place that the Cabernet Sauvignon holds in the Bordeaux region; the Barbera fina of Asti and its neighborhood; also the Freisa, the "strawberry" grape, the wine of which resembles not a little that of the Zinfandel. Later importations brought the Aleatico, several Bonardas, the Provanante, Corba barba ge'ata and Montepulciano; of white grapes the Vernaccia bianca, the Lignanga and Pizzutello.

The publication of the book of Dr. Springmühl on the "condensed must" industry,

about this time called my attention to the remarkably high acid (and sugar) contents of the Piedmontese grapes as compared with those of southern Italy; and the study of the varieties imported by Mr. Doyle confirmed the fact that in these grapes we have a group which may probably be relied upon for the making of good dry wines of excellent keeping qualities, under climatic conditions in which those of more northerly origin lose character, and fail as dry-wine grapes.

The detailed record of our results in this line of study will be given in the report for the past four years, now being elaborated for publication, which has been thus delayed by the extra labor incident to the establishment of the new Experiment stations. Meanwhile the promise of this class of grapes was thought sufficiently good to call for the importation of a larger number of varieties. It was intended that this should have been done last winter; but untoward delays in correspondence frustrated the plan. It has now, however, been consummated by the arrival, in excellent condition, of cuttings of 48 varieties of wine and table grapes from the collection of Count Giuseppe Rovasenda, the distinguished ampelographer of Italy, residing at Turin; with whom correspondence has been carried on for some time past by Assistant Paparelli. We are thus placed in possession of an authentically named collection, which will be partly rooted, partly grafted for more rapid propagation, and future distribution.

The following list gives the names and brief general notes regarding these grapes:

1—*Aspiran noir*.—This variety is especially cultivated in Southern France, where it is chiefly consumed as a table grape. It makes also a bright-colored and delicate wine, very good for table use, but somewhat thin for the trade.

2—*Cipro nero*.—Variety from the island of Cypress, where it makes the best wines, called "la Commanderia." It is also a very nice table grape but of late maturity.

3—*Cipro*.—Under this name we received a few cuttings that we suppose to belong to the white variety.

4—*Cesanese nero*.—Variety from the "Campagna di Roma," where it is most abundantly cultivated and gives a fine and strong wine.

5—*Grisa di Piemonte*.—A late variety adapted both for wine and table use in Piedmont.

6—*Negro amaro*.—Variety from the "Puglie" region (Italy). It is a good bearer and makes good wine.

7—*Negro dolce*.—According to Pulliat, this

*No description available.

seems to be a synonym of *Dolcetto nero*.

8—*Paga-debito*.—A black variety from the "Puglie." Good for wine, abundant bearer.

9—*Morica*.—A black grape. Its wine is one of the best made in Sardinia.

10—*Neiretta*.—This black variety is very much cultivated at the Saluzzo vineyards, Piedmont. It is a heavy bearer.

11—*San Giove*.—A Tuscan variety, which, blended with *Canajolo* and *Malvasia bianca* (without perfume), makes the majority of good Tuscan wines. According to Count Rovasenda's experiments, it would make a good blend with *Freisa* and *Barbera*.

12—*Cadone*.—A Piedmontese variety, bearing large bunches and making a strong and dark-colored wine. It requires long pruning but is a somewhat irregular bearer.

13—*Bolgnino* or *Nebbiolo di Dronero*.—This is also a Saluzzo variety, but different from the true *Nebbiolo*. It makes however, a good wine.

14—*Neiretto grosso canavese*.—From Piedmont. A grape of abundant acidity and of fairly deep color.

15—*Croattina*.—Especially cultivated at Voghera, Piedmont. It has a round, black berry larger than the *Bonarda*. In deep soils produces a well-colored wine.

16—*Danugue*.—A Southern French variety, identical with the *Gros Guillaume* from Nice, possessing large berries, but of late maturity.

17—*Antibo*.—Large-berried, black; cultivated at Saluzzo for table use.

18—*Quagliano*.—Table grape with large black fruit of great delicacy, especially if cultivated in light soils.

19—*Oeru di bove*.—Black variety from Sardinia, very large-berried, late maturity.

20—*Bermestia violacea*.—Grape variety from Piedmont. It has very large berries.

21—*Pelaverga*.—Another Saluzzo variety, cultivated especially for table use. It is an abundant bearer; bunches reddish-black and large berries. In the Saluzzo country it is also used to make a special carbonated sweet wine.

22—*Croetto* or *Moretto*.—Another Piedmont variety, giving a dark-colored must.

23—*Corbeau*.—This variety is already known in California.

24—*Cheninnoir*.—A French variety giving a well-colored wine.

25—*Mammolo toscano*.—A Tuscan variety of late maturity in northern exposures. It is little colored and possesses a violet bouquet.

26—*Barbarossa di Finalborgo*.—Another one of the several *Barbarossa* varieties of Italy. It is good both for wine and table use and also as a keeper for winter use.

27—*Favorita*.—According to Count Rovasenda,

is identical with the "*Vermentino di Liguria*," a good white variety both for wine and table use.

28—*Vernaccia sarda*.—A white variety from Sardinia. Large bearer; good for wine. In Count Rovasenda's collection it gives an immense crop.

29—*Olivette de Cadenet*.—A white table-grape variety from France. Late maturity. It seems identical with the *Crujidero*.

30—*Catarattu a la Porta*.—A White Sicilian variety for wine. It is a heavy bearer, with large and yellow-colored berries, but matures late. The *Catarattu* varieties are used in making the famous *Marsala* wines.

31—*Malvasia di Brolio*.—A Tuscan variety for wine. It is a heavy bearer.

32—*Erbalus di Caluso*.—A Piedmontese white variety especially used for "vins de liqueurs."

33—*Picpoule*.—A variety from France. Grape of good acidity but of late maturity.

34—*Malvasia Rovasenda*.—A seedling obtained by Baron Mendola, the Sicilian ampelographer. It is a good and reddish-black colored grape which deserves to be propagated.

35*—*Lambrusco di Gorbato* (perhaps of Sorbara).

36*—*Gorbo*.

37—*Malvasia de la Cartuja*.—A white Spanish variety.

38—*Bellino*.—A Piedmont black variety, fine for table use; identical with "*Imperial nero*."

39—*Negrara di Gattinara*.—A black, good variety, but it is very much attacked by "Oidium."

40—*Passaretta*.—A variety cultivated in Piedmont both for wine and raisins. Their berries are very like a bird's-eye.

41—*Crejidero*.—A Spanish white variety, good for table use. It is fine-looking, but of late maturity.

42—*Pis-de-chèvre*.—A variety cultivated in France, but obtained from Hungary; it has pointed and ellipsoidal berries. There are two varieties—one white and one red.

43—*Torok goher*.—A black Hungarian variety. It seems to be a valuable grape.

44*—*Colutam Cucco Bitondo*.

45*—*Netretto di Collucellio*.

46*—*Bersan*.

47—*Trivoti*.—A good black variety from Sicily.

48—*Zinzilliosa*.—A black variety resembling somewhat the "*Mourastel*."

Information has been already asked from Count Rovasenda in regard to the Nos. 3, 35, 36, 40, 42, 44, 45, 46, the labels being somewhat obliterated, or incomplete as to white or black variety.

C—IMPORTATION OF OLIVES.

The following varieties of olives have lately been imported from the highly reputed nursery of R. Pecori of Florence, under the auspices of Prof. E. Becchi, the director of the Agricultural Station at Florence:

1—*Bella de Spagna*.—Its oil is very fine, but it is generally used for pickling.

2—*Lecchino*.—On account of its hardness ought to be propagated in those regions frequently subject to damage by frost. The fruit is pretty large and fleshy, but not rich in oil; it is, however, a heavy bearer.

3—*Olivo piangente* (weeping olive).—This beautiful variety is somewhat delicate, therefore it requires mild regions, where it will be a good bearer. Its fruit yields a very agreeable and sweet oil, but it is also good for pickling purposes.

4—*Santa Caterina*.—Bearing large fruit very fine for pickling.

5—*Infrantoio*.—One of the best olive-oil varieties from Tuscany; large bearer.

6—*Correggiolo*.—According to Prof. Caruso is the same as the *Infrantoio*.

7—*Morinello*—This is widely cultivated in Tuscany because it stands cold weather and the action of the wind very well. The fruit contains more flesh than the *Infrantoio*, but the oil is not so fine.

8—*Ascoli*—Bearing large fruit, very fine for pickling purposes, of high value both for Italian and foreign markets.

These trees are now growing finely on the grounds of the station at Berkeley, and will be propagated as rapidly as possible for distribution to the sub-stations, and thereafter to olive culturists at various points within the State.

E. W. HILGARD.

Berkeley, Feb. 28, 1891.

